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OPTIMIZING EARLY RETIREMENT DECISIONS

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fullfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

ROBERT S. GUARINO, MAJ, USA
B.A., United States Military Academy, West Point, New York, 1982
M.B.A., Florida Institute of Technology, Melbourne, Florida, 1990
M.S., Naval Postgraduate School, Moneterey, California, 1993

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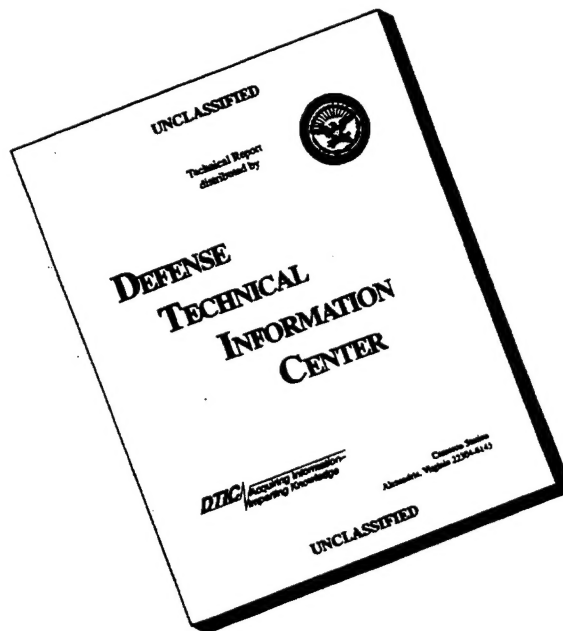
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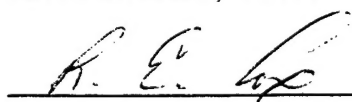
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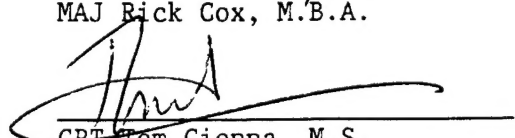
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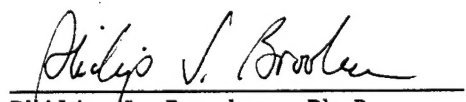
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ABSTRACT

OPTIMIZING EARLY RETIREMENT DECISIONS by MAJ Robert S. Guarino, USA, 64 pages.

The military retirement system is designed to allow the services to encourage the right amount of skilled professional service members to serve in the military. The U.S. Army's early retirement program is a temporary one designed to allow some soldiers to leave the service prior to 20 years of service, to reduce the Army's operating budget without destroying morale. No widespread tool is available for an officer to decide if he should retire between 15 to 20 years of service. It is suspected that many soldiers make this important decision based on instinct. This thesis provides an analysis of whether it makes financial sense for an officer to select early retirement. A spreadsheet formulation is developed and used to indicate if and when an officer should select early retirement. The program investigates the decision at various civilian salary levels and various assumed discount rates.

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CHAPTER I

INTRODUCTION

The United States All-Volunteer Army

The United States Army is responsible for maintaining the size of the Army in accordance with Congressional legislation. A variety of programs are designed to meet this target, while maintaining a well-equipped, trained, and motivated force. The morale or motivation of the force is especially important today because the Army is "all-volunteer".

The legislated reduction of the all-volunteer Army could have devastating impact on the morale of the soldiers. The major concern is that soldiers' morale will suffer as they witness more senior soldiers being forced out of the service without adequate compensation.

The Army developed three incentive programs to preclude this from occurring while the drawdown continues. These are the Voluntary Separation Incentive (VSI), the Special Separation Benefit (SSB), and the Early Retirement System. The purpose of the incentive programs is to allow voluntary departure from service to the maximum extent possible, while ensuring that the right mix of skilled personnel remain in the Army. The incentive programs appear to work well, insuring that morale does not suffer due to the drawdown.

The VSI and SSB programs offer monetary incentives to soldiers who are not yet retirement eligible but voluntarily depart from service.

They are not the subject of this thesis.

Normally, the military only allows retirement after 20 years of service. However, in 1992, the Army implemented the early retirement system.[1] It allows Army officers and noncommissioned officers, with certain skills or branches to retire between 15 and 20 years of service.

While the early retirement program has helped meet the Army's goals for the drawdown, soldiers often debate the wisdom of early retirement. To date, there have been no definitive guidelines or tools for the soldier to use to assess the financial incentives of the program. In other words, while soldiers continue to make decisions about early retirement, no one is sure what procedures they ought to use to help make the decision. Perhaps most soldiers make their decisions based on instinct. Such a decision-making process may not be in the soldiers' best interests.

This thesis develops an approach to determine the optimal time for a representative candidate to select early retirement. The present chapter begins with an overview of the major components of the Military Compensation System, the Military Retirement System, and the Early Retirement System.

Military Compensation System

The military compensation system is continuously reviewed and adjusted by Congress. Some pertinent aspects of the system are discussed below.

The goal of the military retirement system is the retention of a high-quality, trained, and ready force. Factors influencing the system include recruiting requirements, legislated troop ceilings,

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promotion policies, and retirement benefit computations.[2] The system must be attractive enough for new soldiers to join the service, for mid-term reenlistments to remain high, and for the best soldiers to make the service a career.

Six principles underlie the military compensation system:

1. Compensation supports the personnel management system by rewarding advancement and longevity.

2. The system is considered the most efficient and least cost method to attract and retain the people the service wants.

3. The pay is equitable throughout the services and is comparable and competitive to private sector employment.

4. The system must work in both peace and war.

5. It must be rapidly adaptable to changing technology and labor markets and provide quick and fair adjustments.

6. The system must motivate by rewarding superior performance with advancement and pay.[3]

Military Retirement System

The military retirement system is but one portion of the overall military compensation system. At first glance, it seems straightforward and simple. However, this is not the case; it is complex, multifaceted and dynamic.

The military retirement system has some characteristics that differ from civilian and other government retirement systems. First, the employer (US Government), and not the service member makes the contribution to retirement. Vesting is offered to career soldiers only. The benefits therefore are not 100% portable to the civil service or

private sector. Retirees also are subject to recall in time of war. The military retirement system is closed, allowing no lateral entry transfers. It effectively "buys youth and vigor, permitting member separation when the soldier is too old to be militarily useful."[4]

Currently, there are soldiers serving under three different programs within the military retirement system. These are the traditional, high-three, and redux programs.

1. Traditional: Soldiers who entered active duty prior to 8 September 1980, receive 2.5% of their terminal basic pay, times the number of years of service. This yields 50% of the basic pay at 20 years of service. The program has full annual Consumer Price Index (CPI) adjustments. It is referred to as the traditional program.

2. High Three: Soldiers who entered active duty after 8 September 1980, but before 30 July 1986, are under the high-three program. They receive 2.5% of the average of their highest three years of basic pay, times the number of years of service. This yields 50% of the basic pay at 20 years of service, but is not computed on terminal basic pay. The program has full annual CPI adjustments.

3. Redux: Soldiers who entered active duty after 30 July 1986, are under the redux program. They receive 2.5% of the average of their highest three years of basic pay, times the number of years of service, minus 1% for each year less than 30. This yields 40% of the basic pay at 20 years of service, but is not computed on terminal basic pay. The program has annual CPI adjustments minus one point for each year until age 62. At age 62, a one-time catchup of the full CPI is allowed. After age 62, the CPI minus one point continues.

There is a myth concerning 20-year retirements that needs to be addressed. The 20-year retirement is not automatic. By law, officers have the right to retire with 40 years of service (30 for enlisted). Only with the permission of the Service Secretary can soldiers retire with 20 years of service. Service Secretaries normally do not grant this permission in time of war.[5]

The 20-year retirement may not be as appealing as it seems at first glance. Retired pay is calculated as a percentage of basic pay alone. The calculations exclude all allowances, such as housing and incentive pay. Therefore retired pay equals about 36% of active duty compensation for 20-year retirees (57% for 30-year retirees). In fact, most retirees must find another job upon retirement.[6] Furthermore, the retiree is subject to recall.

Early Retirement Program

The early retirement program is but one portion of the overall military retirement system. It started in 1992, when Congress authorized it as a temporary force management tool to assist with the drawdown[7]. It is not planned to be in place for long (it must be re-authorized each year by Congress, as it has since 1992).

A brief overview of the benefits of the program follows. First, it is a retirement program with full medical, exchange, and other lifetime benefits after service ends. Early retirees receive 2.5% of the average of their highest three years of basic pay, times the number of years of service; minus 1% of this figure for each year less than 20. For example, this amounts to 35.625 percent (.025 x 15 = .375; .375 x .95 = .35625) of the basic pay at 15 years of service (up to 50% at 20

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years of service), but is not computed on terminal basic pay. For this thesis we assume the "Traditional" program is in effect. This is because the majority of soldiers being offered early retirement in the near future are soldiers who entered active duty before 8 September, 1980.

Utility of Thesis

This thesis will assist mid-grade officers by allowing them to include quantitative analysis in their retirement planning. At the very least, it may help officers make difficult retirement decisions.

Problem Statement

The Army officer (for whom the "Traditional" program is in effect) would like to know what is the best time to accept early retirement, from the officer's point of view, in terms of pay and allowances.

Overview of Thesis

This thesis provides a case study and tool to analyze the optimal time for a candidate to select early retirement. Due to time and space constraints, it will consider only the soldier's point of view. It will also be limited by the assumptions listed in appendix A.

A similar analysis could be done from the Army's point of view, from an enlisted point of view (with updated data), and from many other perspectives. These are left for future research efforts.

This thesis provides a tool for determining the optimal time for a soldier to retire. Chapter II surveys related literature for similar financial incentive programs and studies. Chapter III presents

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an outline of a spreadsheet formulation used to find the retirement time which maximizes lifetime earnings. It is designed for the non-mathematician reader, and has a few examples. Using the formulation of Chapter III, computational performance and sensitivity analysis for a variety of operational scenarios are listed in Chapter IV. Chapter V provides conclusions and recommendations. Appendix A contains a list of assumptions. Appendix B contains data used in the spreadsheet formulation. Appendix C contains the results of spreadsheet calculations. Appendix D contains two decision matrices.

CHAPTER II

LITERATURE REVIEW

The literature related to military retirement and other compensation systems is extensive. It concerns the evolution of the system, potential future financial problems, and receptiveness to changes in the retirement systems. There is literature concerning the expected value of military retirements, when officers should retire, and a variety of suggestions for alternative retirement plans. However, none of the research provides evidence of any tool that helps officers determine the optimal time to retire prior to 20 years of service.

Retirement Program History and Future Costs

David L. Oles traced the alteration of the military retirement system from a disability pension to a retired and retainer pay for a career in the military.[8] His report was in response to a congressional proposal to expand the eligibility criteria for the early retirement program (circa 1991). The report concluded expanding the criteria would increase voluntary separations.

In 1984, C. M. Murray analyzed the long-term, increasing costs of the military retirement system.[9] Problems with increased retirement costs, due to increased life expectancy, were projected. Budgetary problems predicted by Murray may only be exacerbated by the early retirement system.

As far back as 1975, projections of budgetary problems associated with the military retirement system were predicted. Richard E. Holladay analyzed the expected budgetary increases by extrapolating present trends into the future.[10] As a result of the extrapolation process he projected severe future fiscal burdens. This was primarily due to expanded numbers of military retirees with longer life expectancies. In response to his projections he recommended that only 30 year retirements be granted (1975). This would reduce the projected fiscal burdens.

J. D. Medlin analyzed the military retirement benefits (1984), concluding that their benefits should be modified because they were too generous.[11] In particular, he felt that long-term incentives should be replaced by short-term incentives (such as increased early retirement payments) to reduce overall taxpayer costs.

While the aforementioned studies predicted future budgetary problems with the old retirement system, no one seems to have acted on the recommendations. Instead, the retirement programs and eligibility for them have been expanded to include, in some cases, 15-year retirements. The reasons for this development may have more to do with politics than budgetary considerations. However, an investigation as to why this expansion developed is not the focus of this thesis.

Alterations to Retirement Programs

Some additional studies assessing the impact of alterations in the retirement system were conducted. Ralph Miller Rikard conducted surveys (1980) and determined that officers were receptive to changes in the military retirement systems.[12] He concluded that retention would

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not suffer under a variety of programs. However, his conclusions were drawn during the Cold War and might not be pertinent today.

In 1979, William Cotesworth Keller developed a system for rating officer's views of various retirement programs.[13] This tool would help quantify the perceptions service members had about various military retirement programs. The technique he used consisted of factoring various retirement proposals into common characteristics, ranking and weighting each characteristic, and computing a relative weighted preference for each plan. He recommended his survey and rating system be expanded to include a sample of the entire military population. This might help the military to choose between alternative proposed retirement systems.

In 1977, Michael F. Carpenter developed a model which attempted to quantify the monetary savings for alternative retirement programs.[14] His model also attempted to assess the costs to the personnel system for these programs. He found that changes in the retirement benefits may result in significant changes in retention patterns, such as reduced retention of lower grade personnel. These changes could have associated turnover costs that exceed any savings resulting from reduced retirement benefits.

Robert D. Merkl conducted an analysis of the changes in force composition resulting from the changes in the military retirement system (1988).[15] He found that reductions in compensation could devastate Army retention, leading to a younger, less experienced and educated force. He suggested and evaluated a lump sum payment option, in lieu of current retirement options. He concluded that the lump sum option could result

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in significant savings for the government, while helping to maintain the required force structure for the Army.

In general, these studies warned that any reductions in the military retirement system would have unintended consequences. These would primarily affect the personnel system. Past experience may have also taught the military that mandatory reductions in force have a negative impact on morale (similar to that which was predicted with alterations in the retirement system). This may be one of the reasons that the current military drawdown is being completed with the use of new incentive programs (such as the VSI, SSB, and early retirements).

When to Retire

Richard V. Cooper analyzed military retirees' post-service earnings (1981).[16] He concluded that military officer retirees earn less than their civilian counterparts. However, this is almost entirely a function of the amount of work the retirees are willing to perform. Military officer retirees who work full-time earn about as much as their civilian counterparts, but those who work less time earn about 25% less than their full-time civilian counterparts. His study did not address the early retirement system in place today.

Concerning when an officer should retire, Glenn G. Sherwood recommended officers retire as early as possible and invest their retirement checks to maximize financial benefits (1972).[17] His report was based on an analysis of finances for officers who could retire any time after 20 years of service.

Although the aforementioned literature provides useful information to consider for the development of the model used in this

thesis, none of it used data from the current early retirement program. Also, none of the literature analyzed retirement decisions for officers with less than 20 years of service. This thesis is an attempt to analyze the current early retirement system with current data.

CHAPTER III

SPREADSHEET FORMULATION

Data Structure

This chapter presents an outline of a spreadsheet formulation used to find the retirement time that maximizes lifetime earnings. It contains hypothetical earnings for a major with 15 years of service, from the ages 35 through 70. It reflects the structure of the data available in Army financial records. The Army pays its soldiers monthly (although pay is sometimes distributed biweekly). All of the input data to include civilian pay were consolidated into monthly payments.

A complete list of assumptions used to structure the formulation and limit its size is included in appendix A. The rationale behind each assumption is also included.

The spreadsheet formulation models a soldier's financial situation with maximization of lifetime earnings as the objective. Total earnings for this model consist of the present value of all compensation (military pay, military retired pay, and civilian wages), active duty military housing, and other allowances (basic allowance for subsistence). Data tables for the components of total earnings (military pay, military retired pay, civilian wages, housing, and other allowances) are included in appendix B.

The values included in each of the abbreviated data tables are not discounted. However, present value discount factors were applied to the values before they were consolidated in the spreadsheet formulation. This was accomplished by dividing by the given discount rate, compounded for the number of years past the 15 years of service date.

Military Pay

The data used for military pay are presented in appendix B. They show before tax income. Individual users of this model may adjust the monthly pay amount to reflect their own expectations for tax and other deductions (see appendix A, Assumption #8).

If the soldier elects to retire at 15 years of service (Month0 in the table refers to 15 years and zero months of service), he will receive his military pay for the prior month, on the first day of that month. He will get $3,881 on that day. This figure is the monthly basic pay for a major with 15 years of service. However, he will receive no more military pay. So he receives the stream of payments of $0.00 reflected in the first column of data (from Month1 to Month420-- when he is 70 years old). The first column of data reflects the military pay stream he can expect if he retires at 15 years of service.

If he retires at 15 years and 1 month of service (Month1), he can expect 2 payments of military pay of $3,881, and 419 months of no military pay. The second column of data reflects the military pay stream he can expect if he retires at 15 years and one month. This pattern continues until the last column of data, which reflects his pay if he retires at 20 years (Month60 or 15 years and 60 months).

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The $3,881 he receives at 15 years of service remains the same until he reaches 16 years of service. Then, he receives an increase in pay that reflects the raise received for 16 years of service ($4052). The data in this table reflect increases in pay at 16 and 18 years of service due to longevity, and an increase in pay at 17 years due to promotion to lieutenant colonel.

The actual table used in the formulation is 61 columns wide and 421 rows long. This is too large to include as an appendix. The abbreviated military pay table is included only as a guide. Similar abbreviated pay tables are included for military allowances, military retired pay, and civilian pay.

Military Allowance Pay

The data used for the military allowance pay are presented in appendix B. If the soldier elects to retire at 15 years of service, he will receive his military allowance pay ($943) for the prior month on the first day of that month. This is the monthly basic allowance for quarters, plus an assumed variable housing allowance ($200), for a major with 15 years of service. However, he will receive no further military allowance pay. Thus, the structure of the military allowance pay data parallels the structure of the military pay data.

Military Retired Pay

The data used for military retired pay are presented in appendix B. Once again, the values are before tax income. If the soldier elects to retire at 15 years of service, he will receive no military retired pay on the first day of that month. However, at the

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end of the first month of retirement he will get $1,383. This is the monthly basic pay for a major with 15 years of service, multiplied by .35625 (that is, $3,881 x .35625 = $1,383).

After receiving no military retired pay at 15 years of service, he will begin receiving $1,383 in monthly military retired pay the next month. The first column of data reflects the military retired pay stream he can expect through age 70, if he retires at 15 years of service.

If he retires at 15 years and 1 month, he can expect 2 months of military retired pay of $0 and 419 months of $1,392 in military retired pay ($3,881 x .35854 = $1,392). The second column reflects the military retired pay stream he can expect if he retires at 15 years and one month. This pattern continues until the last column, which reflects his pay if he retires at 20 years (15 years and 60 months).

Notice that whatever the initial military retired payment is, it remains the same until he reaches 70 years of age. This is because the retired pay multiple is a percentage of basic pay, calculated only once. The only adjustments to the data are that they were discounted to their present values before they were added to other types of pay. There were no adjustments for inflation or cost of living.

Civilian Pay

The data used for civilian pay are presented in appendix B. The values are before tax income. If the soldier elects to retire at 15 years of service, he will receive no civilian pay on the first day of that month. However, at the end of the first month of retirement he

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will get $833. This figure is the monthly civilian pay he can expect if he is to earn $10,000 a year.

The data in this table have the same structure as military retired pay. If the officer retires at 15 years, he will receive $833 in monthly civilian pay until he is 70 years old. The first column of data reflects the civilian pay stream he can expect if he retires at 15 years. The second column reflects the civilian pay stream he can expect if he retires at 15 years and one month. This pattern continues until the last column. In this formulation, civilian pay remains the same until he reaches 70 years of age. A user could, however, adjust the model to reflect different assumptions about the civilian pay stream.

Ten thousand dollars was chosen as a base figure for ease of calculation when civilian salaries were adjusted. When the data are summed between tables, the civilian pay data were adjusted to be multiples of the $10,000 annual figure. For example, all data were multiplied by .5 to obtain the civilian pay data for an officer who could only earn $5,000 in annual civilian pay. Adjustments were made to obtain civilian pay data for pay ranging from $5,000 to $120,000 (in increments of $5,000). The only other adjustments to the data are that they were discounted to their present value before being added to other types of pay.

Formulation

The spreadsheet formulation maximizes the sum of payments expected over the next 35 years of a soldier's life. The payment streams for military pay, military allowances, military retired pay, and civilian salary are discounted to present values by dividing by the

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discount rate each year. Discount rates vary from 4%, 8%, and 12%. The

civilian pay data are adjusted to obtain values ranging from $5,000 to

$120,000 (in increments of $5,000).

This stream of payments is summed up from the fifteenth year

of service until the soldier reaches 70 years of age. The results of

the calculations for each particular discount rate and each civilian pay

rate are included in appendix C. These figures are compared to each

other. For each assumed civilian pay level and discount rate, one month

is selected as the optimal month to retire.

CHAPTER IV

COMPUTATIONAL EXPERIENCE

Examples

For these examples the reader should refer to appendix C, which contains the summation of payment streams for each assumed discount rate and civilian pay level. The first table lists the amount a soldier earns if he selects a discount rate of 4%. Similar tables are included in appendix C for discount rates of 8% and 12%.

Suppose a soldier accepts a discount rate of 4% over the remainder of his life, and assumes that he can make $30,000 in annual civilian wages through age 70. Appendix C indicates that this soldier will make $908,841 (at present value) if he retires at 15 years of service. He will also make $911,871 if he retires at 15 years and 1 month. This pattern continues (across the $30,000 row of the table) until the soldier can make $1,157,650 if he retires at year 20 (15 years and 60 months). Each soldier should select the month to retire that maximizes his lifetime total payments, according to the assumed discount rate and civilian pay level. In this case, the maximum lifetime income occurs if he retires at 20 years of service.

Now suppose the soldier selects an 8% discount rate, and assumes that he can make $70,000 in annual civilian wages through age 70. Appendix C, indicates that this soldier will make $1,094,298 if he

retires at 15 years of service. He will also make $1,093,258 if he retires at 15 years and 1 month. This pattern continues (across the $70,000 row of the table) until the soldier can make $1,089,892 if he retires at year 20 (15 years and 60 months). However, at just after 18 years of service (15 years and 37 months), the soldier reaches his maximum payments of $1,102,117 (at present value). Thus, he should retire at just over 18 years of service.

A consolidated listing of the optimal times to retire for similar examples is included in table 1. There is a definite pattern to the early retirement decisions suggested by table 1. The lower the discount rate, the higher the civilian pay must be before it makes any sense to retire before 20 years of service. Another pattern is that it most often makes sense to retire at 15, 18 or 20 years of service. These retirement recommendations reflect the military pay structure (which gives a raise at 18 years of service), and the structure of the formulation (which has a minimum of 15, and a maximum of 20 years of service).

Table I Optimal Month to Retire, After 15 Years of Service

CIVILIAN SALARY	DISCOUNT RATES								
	.01	.02	.03	.04	.05	.06	.07	.08	.12
$5,000	60	60	60	60	60	60	60	60	60
$10,000	60	60	60	60	60	60	60	60	60
$15,000	60	60	60	60	60	60	60	60	60
$20,000	60	60	60	60	60	60	60	60	60
$25,000	60	60	60	60	60	60	60	60	60
$30,000	60	60	60	60	60	60	60	60	60
$35,000	60	60	60	60	60	60	60	60	60
$40,000	60	60	60	60	60	60	60	60	60
$45,000	60	60	60	60	60	60	60	60	60
$50,000	60	60	60	60	60	60	60	60	60
$55,000	60	60	60	60	60	60	60	60	55
$60,000	60	60	60	60	60	60	60	59	36
$65,000	60	60	60	60	60	56	39	37	0
$70,000	60	60	60	59	39	37	37	37	0
$75,000	60	60	56	37	37	37	37	0	0
$80,000	60	51	37	37	37	37	0	0	0
$85,000	56	37	37	37	0	0	0	0	0
$90,000	37	37	37	37	0	0	0	0	0
$95,000	37	37	37	0	0	0	0	0	0
$100,000	37	37	0	0	0	0	0	0	0
$105,000	37	37	0	0	0	0	0	0	0
$110,000	37	0	0	0	0	0	0	0	0
$115,000	37	0	0	0	0	0	0	0	0
$120,000	0	0	0	0	0	0	0	0	0

Table 1 should be used only when a soldier assumes he will earn a uniform civilian salary until the age of 70. If the soldier believes his civilian pay level will fluctuate as a result of the experience he gains by staying on active duty, table 1 should not be used. For this type of scenario (where a soldier expects a fluctuating civilian pay level), the reader should refer to the data in appendix C.

An example would be helpful. Suppose a soldier selects a discount rate of 12%, and assumes that he can make $40,000 in annual civilian wages through age 70 if he retires at 15 years of service.

However, he assumes that his skills will increase with his military experience and that he can make $50,000 in annual civilian wages if he remains until 16 years of service. He can also make $60,000, $70,000, $80,000 and $90,000 if he retires at 17, 18, 19, and 20 years, respectively.

Appendix C indicates that this soldier will make $522,792 (at present value) if he retires at 15 years of service (figure obtained by the intersection of the $40,000 row and Month0 column, in the .12 discount rate table). He could similarly retire at 16 years of service and earn $616,203 (figure obtained by the intersection of the $50,000 row and Month12 column, in the .12 discount rate table). Similarly, retiring at years 17, 18, 19 and 20 would result in lifetime earnings of $697,419 ($60,000/Month24), $771,987 ($70,000/Month36), $828,983 ($80,000/Month48), and $864,686 ($90,000/Month60), respectively.

For this example, the best time to retire is at 20 years. The present value of his lifetime earnings will be $864,686. The soldier should retire whenever the maximum lifetime income is projected for any of his options.

Similar scenarios where a soldier expects a fluctuating civilian pay level can be analyzed in similar fashion. Even scenarios where the soldier will expect decreasing civilian pay levels as he remains on active duty can be analyzed in this fashion. The soldier should be sure always to select the maximum payment he can receive for any time up to the time he retires, as the number to use for comparison purposes.

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Sensitivity Analysis

The results outlined above already include some sensitivity analysis. Variations in discount rate and civilian pay can be used as adjustments from the particular figures the soldier considers applicable to his situation. He may be able to determine how much more he needs to be paid to alter his decision to retire.

Instead of varying such factors as the pay table data, the retirement multiples, and other data, this section will focus on an analysis of intangible factors that affect a soldier's decision to retire. In this analysis, factors to be considered in addition to pay and allowances include career satisfaction, risk aversion, and safety/security of family. Different soldiers may select different factors to assist in their decision-making process. The ones used here provide the reader an illustrative example that can be adapted to the soldier's individual situation.

Decision Matrix Example I

An appropriate tool for analyzing the effects these factors have on retirement decisions is the decision matrix. This allows the user to make decisions when there are multiple criteria and differing weight values for each criterion.[18]

The first decision matrix in appendix D has four criteria (pay and allowances, career satisfaction, risk aversion, and safety/security). Each criterion is given a subjective weight based on the soldier's assessment of its relative importance. The six candidate strategies are to retire at year 15, 16, 17, 18, 19 or 20. The

objective is to select the optimum strategy, "based on an abstract measure of utility."[18]

For this example the soldier assumes a discount rate of .04 and civilian pay of $50,000. Appendix C lists the payments a soldier can receive if he retires at years 15 through 20. If the soldier retires with 15 years of service he receives $1,296,910 (the .04 discount rate table, with $50,000 salary and Month0). For retirement decisions at years 16, 17, 18, 19, and 20, the soldier receives $1,312,083, $1,342,147, $1,392,905, $1,435,160 and $1,453,158, respectively. Thus, the decision to retire at 20 years is "best, and it therefore receives the rank value of one in the decision matrix. In sequence the years 19, 18, 17, 16, 15 receive rank values of 2, 3, 4, 5, and 6, respectively.

Career satisfaction relates to a variety of intangibles that contribute to a soldier's feeling of value and potential for professional progression. It includes such things as level of responsibility, potential for reward, public recognition, and self-esteem. For this example, the soldier has wanted to be a soldier all of his life. He feels a military career is the only one worth having. The decision to retire at 20 years is "best," and it therefore receives the rank value of 1 in the decision matrix. In sequence the years 19, 18, 17, 16, 15 receive rank values of 2, 3, 4, 5, and 6, respectively.

Risk aversion relates to a variety of intangibles that contribute to a soldier's feeling of uncertainty concerning future employment, steadiness of compensation, and potential for overseas assignments. These intangibles can be in conflict: for example, a

soldier may not want to serve overseas but has a need for steady income. For the present example the soldier is a risk taker with respect to future employment and compensation. He feels he can get good employment anytime and anywhere he wants, but he does not want to go overseas. He places little value on the steady pay offered by the military. Thus, the decision to retire at 15 years is "best," and it therefore receives the rank value of 1 in the decision matrix. In sequence the years 16, 17, 18, 19, and 20 are ranked of 2, 3, 4, 5, and 6, respectively.

Safety and security relate to a variety of intangibles that contribute to a soldier's feeling of physical and emotional security. These include such things as medical benefits, safe community, safe occupation, and family and marital pressures. These intangibles also can be in conflict. For this example, the soldier places little value on the military's medical benefits. He lives in substandard housing, his job is dangerous, and puts considerable strain on his family. The decision to retire at 15 years is "best," and it therefore receives the rank value of 1 in the decision matrix. In sequence the years 16, 17, 18, 19, and 20 receive values of 2, 3, 4, 5, and 6, respectively.

The weight selection process is of paramount importance to a decision matrix, and is a very difficult process for several reasons. First, often there is no known measurable objective relationship between criteria. Second, since the weights are designed to magnify differences, they should be sensitive to the actual range of values for each criterion. Often they are not. Third, with the same criteria, it is likely that different individuals would weight them differently. This may be due to different perceptions, tastes, and knowledge.

For the present example, the soldier feels that his most important criterion is safety and security. He places twice as much importance on safety and security as on compensation. He also feels compensation is 3 times more important than both risk aversion and career satisfaction. Thus, the decision matrix criterion of pay and allowances, career satisfaction, risk aversion, and safety/security receive weights of 3, 1, 1, and 6, respectively.

Multiplying the weights by the values in the decision matrix gives weighted rank sums of 31, 32, 37, 40, 41 and 42, for retirement decisions of 15, 16, 17, 18, 19 and 20 years, respectively. Since less is better for this decision matrix, the soldier should retire at 15 years of service.

Decision Matrix Example II

Now suppose the soldier has the same criteria as listed in the above example. However, he places different levels of importance on each criterion. This is because he places more importance on pay. Since he has no family, safety is not a major concern for him.

The second decision matrix in appendix D reflects this soldier's situation. Pay is four times as important as career satisfaction, risk aversion and safety (which are equally important for this soldier). The weight factors are 4, 1, 1, and 1, respectively.

He has the same assumed discount rate and civilian pay as the prior example. Thus, the rankings are the same.

He feels that a military career is not very exciting. For him, it is merely a method to obtain money. There is actually

decreasing career satisfaction past 15 years of service. Thus, career satisfaction has reversed rankings from the previous example.

Risk aversion, and safety/security have the same rankings as in the previous example.

Multiplying the weights by the values in the decision matrix gives weighted rank sums of 27, 26, 25, 24, 23 and 22, for retirement decisions of 15, 16, 17, 18, 19 and 20 years, respectively. Since less is better for this decision matrix, the soldier should retire at 20 years of service.

These two examples illustrate the decision matrix methodology. These are not the only criteria soldiers might use to make a decision. Different soldiers will have different criteria, different rankings and different weights for their particular situation.

Other, more refined procedures, such as the Analytical Hierarchy Process (AHP),[19] Techniques for Order Preference by Similarity to Ideal Solution (TOPSIS),[20] or Multiattribute Utility Theory[21] are available for those who want to carry the decision analysis beyond the level of detail provided by the rank-weighting method discussed in this section.

CHAPTER V

CONCLUSIONS/RECOMMENDATIONS

This thesis developed a spreadsheet formulation to determine the optimal time for a soldier to retire. The results (table 1) indicate that soldiers should stay in the service until 20 years of service, unless they can earn civilian pay of at least $55,000 a year (for discount rates 12% and below). In fact, soldiers should probably earn at least $70,000 a year to get out before 20 years of service, considering more reasonable discount rates of 4 to 5%. It almost always makes financial sense to get out of the service before 20 years, if the soldier can earn at least $85,000 a year. If a soldier can earn $120,000 a year, he should retire at 15 years of service, with no concern for future discount rates. If the soldier assumes a discount rate of 4%, he should retire at 18 years of service, if he can earn $75,000-$90,000.

All of the conclusions reached above rely on a constant civilian pay rate and on compensation as the only decision criterion. Fluctuating civilian pay rates and inclusion of other decision criteria make the retirement decision process more complicated. The methodology outlined in chapters III and IV should be used to assess specific situations.

Recommendations for future research include investigations that relax any of the assumptions in appendix A. For example, a study could be conducted with enlisted soldiers' pay data. Other formulations could use more varied, and perhaps more realistic, civilian salary data. Taxes and CPI adjustments might also be included in other models.

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ENDNOTES

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[3]Ibid.

[4]Ibid.

[5]Ibid.

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[7]"Officer Drawdown '96," Army Times, 11 September 1996, 23.

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[14]Michael F. Carpenter and Michael Lacey, "A Preliminary System Dynamics Investigation of Alternative Military Retirement Programs," Air Force Institute of Technology, December 1977, passim.

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[19]Thomas L. Saaty, <u>The Analytical Heirarchy Process: Planning, Priority Setting, Resource Allocation</u> (New York: 1980), passim.

[20]Ralph Keeney and Howard Raiffa, <u>Decisions with Multiple Objectives: Preferences and Value Tradeoffs</u> (New York: John Wiley and Sons, 1976), passim.

[21]Ching-Lai Hwang, and Kwangsun Yoon, <u>Lecture Notes in Economics and Mathematical Systems: Multiple Attribute Decision Making</u> (New York: Springer-Verlag, 1981), passim.

APPENDIX A

ASSUMPTIONS

This thesis used several assumptions to limit the scope of research. The spreadsheet formulation required several additional assumptions to limit the amount of data to manageable amounts. Users can adjust numbers in the spreadsheets to fit their particular situations. The assumptions are listed below.

1. The spreadsheet formulation includes data for one representative type of officer (15 to 20 years of service, with no breaks in service, and no enlisted time). Data are not provided for enlisted or warrant officers. Officers with other service profiles should adjust the formulation to fit their particular needs. For this spreadsheet formulation, it is assumed the officer could continue service until year 20, if so desired. That is, the possibility of involuntary separation is not considered. As other studies have dealt with retirement after 20 years, advancement potential beyond this time is not considered. There is no consideration of Army branch, or the size of the future Army.

2. A 35 year planning horizon is assumed. As such, the data in the spreadsheets are for an officer who is 35 years old at 15 years of service, can expect to be promoted at 17 years of service, and will die/stop working at 70 years of age. This assumption is to facilitate

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consistent comparisons of retirement options, for the purpose of economic analysis.

3. The spreadsheet formulation allows soldiers to base their decision solely on financial criteria. It is assumed the only factors of financial significance to the officer are compensation (military pay, military retired pay, civilian pay), housing and allowances. These are included in the spreadsheet formulation. Since happiness, security, and other comfort considerations vary widely, they are excluded. However, because these factors may be important to the decision maker, they are discussed in an additional sensitivity analysis in Chapter IV.

4. Discount rates are assumed (selected) by the user. Data presented in the tables (appendix B) are not discounted. However, all data are discounted to present values in the spreadsheet formulation.

5. The data are assumed to be constant year dollar values, to facilitate meaningful comparison.

6. It is assumed the user will be offered the early retirement under the traditional program (2.5% of terminal basic pay, times the number of years of service). This allows the formulation to be of value to soldiers currently making retirement decisions. It also simplifies calculations for the retirement pay. Also, soldiers most affected by the early retirement opportunity fall into this year-group category.

7. It is assumed the officer has no breaks in service, or prior enlisted service. He has no bonuses, special pay (flight and doctor's pay), or unused leave balances. These assumptions simplify the construction of the pay tables, but do not compromise the validity of

the model. Rather, they result in a slight reduction in the applicable population, as discussed in paragraph 6, above.

8. State and federal tax rates vary significantly, and are not the focus of this thesis. To model tax rates under these circumstances would make consistent (_ceterus paribus_) comparisons difficult.

9. It is assumed that veteran's benefits are the same for soldiers retiring at any time. Thus, veteran's benefits (other than pay) are excluded, to simplify the construction of the compensation tables. These benefits include (but are not limited to):

    A. Transportation/moving expenses.

    B. Education benefits.

    C. Employment advantages.

    D. Employment restrictions.

    E. Life insurance entitlement.

    F. Home loan entitlement.

    G. Burial entitlement.

    H. Insurance entitlement.

    I. Disability compensation.

    J. Vocational rehabilitation.

    K. Survivor benefits.

10. Variable housing allowance is assumed to be $200 per month. Basic allowance for quarters adjusts at 17 years when promoted to lieutenant colonel. It is assumed the soldier lives off post or, if

on post, the benefit is equal to the value of the variable housing allowance and basic allowance for quarters. These assumptions facilitate comparison.

11. It is assumed that the civilian pay rate is constant. However, varying civilian pay can be modeled as indicated in Chapter IV. To make assumptions about increasing civilian pay streams amounts to speculation and would be inconsistent with the constant year dollar (zero inflation) assumption.

MILITARY PAY TABLE

Military pay structure; in dollars per month.

	Month soldier retires:									
	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	...	MONTH60
Earnings:										
MONTH0	3881	3881	3881	3881	3881	3881	3881	3881	...	3881
MONTH1	0	3881	3881	3881	3881	3881	3881	3881	...	3881
MONTH2	0	0	3881	3881	3881	3881	3881	3881	...	3881
MONTH3	0	0	0	3881	3881	3881	3881	3881	...	3881
MONTH4	0	0	0	0	3881	3881	3881	3881	...	3881
MONTH5	0	0	0	0	0	3881	3881	3881	...	3881
MONTH6	0	0	0	0	0	0	3881	3881	...	3881
MONTH7	0	0	0	0	0	0	0	3881	...	3881
MONTH8	0	0	0	0	0	0	0	0	...	3881
MONTH9	0	0	0	0	0	0	0	0	...	3881
MONTH10	0	0	0	0	0	0	0	0	...	3881
MONTH11	0	0	0	0	0	0	0	0	...	3881
MONTH12	0	0	0	0	0	0	0	0	...	3881
MONTH13	0	0	0	0	0	0	0	0	...	4052
MONTH14	0	0	0	0	0	0	0	0	...	4052
...										
MONTH419	0	0	0	0	0	0	0	0	...	0
MONTH420	0	0	0	0	0	0	0	0	...	0

MILITARY ALLOWANCE TABLE

Military allowance structure; in dollars per month.

	Month soldier retires:									
	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	...	MONTH60
Earnings:										
MONTH0	943	943	943	943	943	943	943	943	943	943
MONTH1	0	943	943	943	943	943	943	943	943	943
MONTH2	0	0	943	943	943	943	943	943	943	943
MONTH3	0	0	0	943	943	943	943	943	943	943
MONTH4	0	0	0	0	943	943	943	943	943	943
MONTH5	0	0	0	0	0	943	943	943	943	943
MONTH6	0	0	0	0	0	0	943	943	943	943
MONTH7	0	0	0	0	0	0	0	943	943	943
MONTH8	0	0	0	0	0	0	0	0	0	943
MONTH9	0	0	0	0	0	0	0	0	0	943
MONTH10	0	0	0	0	0	0	0	0	0	943
MONTH11	0	0	0	0	0	0	0	0	0	943
MONTH12	0	0	0	0	0	0	0	0	0	943
MONTH13	0	0	0	0	0	0	0	0	0	943
MONTH14	0	0	0	0	0	0	0	0	0	943
...										
MONTH419	0	0	0	0	0	0	0	0	0	0
MONTH420	0	0	0	0	0	0	0	0	0	0

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MILITARY RETIRED PAY TABLE

Military retired pay structure; in dollars per month.									
	Month soldier retires:								
	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	. . .	MONTH60
Earnings:										
MONTH0	0	0	0	0	0	0	0	0	. . .	0
MONTH1	1383	0	0	0	0	0	0	0	. . .	0
MONTH2	1383	1392	0	0	0	0	0	0	. . .	0
MONTH3	1383	1392	1400	0	0	0	0	0	. . .	0
MONTH4	1383	1392	1400	1409	0	0	0	0	. . .	0
MONTH5	1383	1392	1400	1409	1418	0	0	0	. . .	0
MONTH6	1383	1392	1400	1409	1418	1427	0	0	. . .	0
MONTH7	1383	1392	1400	1409	1418	1427	1436	0	. . .	0
MONTH8	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH9	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH10	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH11	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH12	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH13	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
MONTH14	1383	1392	1400	1409	1418	1427	1436	1436	. . .	0
. . .	. . .									
MONTH419	1383	1392	1400	1409	1418	1427	1436	1436	. . .	2335
MONTH420	1383	1392	1400	1409	1418	1427	1436	1436	. . .	2335

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CIVILIAN PAY TABLE

Civilian pay structure; in dollars per month (this table assumes $10,000 annual salary).

Earnings:	Month soldier retires:									
	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	....	MONTH60
MONTH0	0	0	0	0	0	0	0	0		0
MONTH1	833	0	0	0	0	0	0	0		0
MONTH2	833	833	0	0	0	0	0	0		0
MONTH3	833	833	833	0	0	0	0	0		0
MONTH4	833	833	833	833	0	0	0	0		0
MONTH5	833	833	833	833	833	0	0	0		0
MONTH6	833	833	833	833	833	833	0	0		0
MONTH7	833	833	833	833	833	833	833	0		0
MONTH8	833	833	833	833	833	833	833	833		0
MONTH9	833	833	833	833	833	833	833	833		0
MONTH10	833	833	833	833	833	833	833	833		0
MONTH11	833	833	833	833	833	833	833	833		0
MONTH12	833	833	833	833	833	833	833	833		0
MONTH13	833	833	833	833	833	833	833	833		0
MONTH14	833	833	833	833	833	833	833	833		0
...										
MONTH419	833	833	833	833	833	833	833	833		833
MONTH420	833	833	833	833	833	833	833	833		833

APPENDIX C

RESULTS WITH .04 DISCOUNT RATE

Overall Earnings if Retire at 15 years and n Months; .04 discount rate, and various civilian pay.

Discount rate = .04

Salary:	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	MONTH8	MONTH9
5000	423755	428867	433961	439037	444095	449135	454157	457127	464147	469115
10000	520773	525468	530145	534805	539446	544070	548675	551229	557832	562383
15000	617790	622069	626330	630573	634797	639004	643193	645331	651517	655652
20000	714807	718669	722514	726340	730149	733939	737711	739432	745202	748921
25000	811824	815270	818698	822108	825500	828874	832230	833534	838887	842189
30000	908841	911871	914882	917876	920851	923808	926748	927636	932573	935458
35000	1005858	1008471	1011066	1013643	1016202	1018743	1021266	1021737	1026258	1028727
40000	1102876	1105072	1107250	1109411	1111553	1113678	1115784	1115839	1119943	1121995
45000	1199893	1201673	1203435	1205179	1206904	1208612	1210302	1209941	1213628	1215264
50000	1296910	1298273	1299619	1300946	1302256	1303547	1304820	1304042	1307313	1308533
55000	1393927	1394874	1395803	1396714	1397607	1398482	1399339	1398144	1400998	1401801
60000	1490944	1491475	1491987	1492482	1492958	1493416	1493857	1492246	1494684	1495070
65000	1587961	1588075	1588171	1588249	1588309	1588351	1588375	1586347	1588369	1588339
70000	1684979	1684676	1684355	1684017	1683660	1683286	1682893	1680449	1682054	1681607
75000	1781996	1781277	1780540	1779785	1779011	1778220	1777411	1774551	1775739	1774876
80000	1879013	1877877	1876724	1875552	1874363	1873155	1871929	1868652	1869424	1868145
85000	1976030	1974478	1972908	1971320	1969714	1968090	1966448	1962754	1963109	1961413
90000	2073047	2071079	2069092	2067088	2065065	2063024	2060966	2056856	2056795	2054682
95000	2170064	2167679	2165276	2162855	2160416	2157959	2155484	2150957	2150480	2147951
100000	2267082	2264280	2261460	2258623	2255767	2252894	2250002	2245059	2244165	2241219
105000	2364099	2360881	2357645	2354391	2351118	2347828	2344520	2339161	2337850	2334488
110000	2461116	2457481	2453829	2450158	2446470	2442763	2439038	2433262	2431535	2427757
115000	2558133	2554082	2550013	2545926	2541821	2537698	2533557	2527364	2525220	2521025
120000	2655150	2650683	2646197	2641694	2637172	2632632	2628075	2621466	2618906	2614294

RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH10	MONTH11	MONTH12	MONTH13	MONTH14	MONTH15	MONTH16	MONTH17	MONTH18
5000	474065	478996	483910	503377	508245	513313	518145	523176	527973
10000	566917	571432	575930	594996	599463	604131	608563	613193	617589
15000	659769	663868	667949	686614	690681	694949	698980	703210	707206
20000	752621	756303	759968	778233	781899	785766	789397	793227	796822
25000	845473	848739	851987	869852	873118	876584	879814	883243	886438
30000	938325	941175	944006	961471	964336	967402	970232	973260	976054
35000	1031178	1033610	1036025	1053089	1055554	1058220	1060649	1063277	1065671
40000	1124030	1126046	1128045	1144708	1146772	1149037	1151066	1153294	1155287
45000	1216882	1218482	1220064	1236327	1237990	1239855	1241483	1243311	1244903
50000	1309734	1310917	1312083	1327945	1329209	1330673	1331901	1333327	1334520
55000	1402586	1403353	1404102	1419564	1420427	1421491	1422318	1423344	1424136
60000	1495438	1495789	1496121	1511183	1511645	1512308	1512735	1513361	1513752
65000	1588291	1588224	1588140	1602801	1602863	1603126	1603152	1603378	1603368
70000	1681143	1680660	1680160	1694420	1694081	1693944	1693570	1693394	1692985
75000	1773995	1773096	1772179	1786039	1785300	1784761	1783987	1783411	1782601
80000	1866847	1865531	1864198	1877657	1876518	1875579	1874404	1873428	1872217
85000	1959699	1957967	1956217	1969276	1967736	1966397	1964821	1963445	1961834
90000	2052551	2050403	2048236	2060895	2058954	2057215	2055239	2053461	2051450
95000	2145404	2142838	2140255	2152513	2150173	2148032	2145656	2143478	2141066
100000	2238256	2235274	2232275	2244132	2241391	2238850	2236073	2233495	2230682
105000	2331108	2327710	2324294	2335751	2332609	2329668	2326490	2323512	2320299
110000	2423960	2420145	2416313	2427369	2423827	2420486	2416908	2413528	2409915
115000	2516812	2512581	2508332	2518988	2515045	2511303	2507325	2503545	2499531
120000	2609664	2605017	2600351	2610607	2606264	2602121	2597742	2593562	2589148

RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH19	MONTH20	MONTH21	MONTH22	MONTH23	MONTH24	MONTH25	MONTH26	MONTH27
5000	532967	537728	542683	547620	552327	557227	593909	598953	604186
10000	622182	626543	631098	635635	639941	644440	680737	685397	690244
15000	711398	715358	719513	723649	727555	731653	767565	771840	776302
20000	800614	804173	807928	811663	815169	818867	854394	858283	862361
25000	889830	892989	896343	899678	902783	906080	941222	944726	948419
30000	979046	981804	984758	987692	990397	993294	1028050	1031169	1034477
35000	1068261	1070619	1073173	1075706	1078011	1080507	1114879	1117613	1120535
40000	1157477	1159435	1161587	1163721	1165625	1167720	1201707	1204056	1206593
45000	1246693	1248250	1250002	1251735	1253238	1254934	1288535	1290499	1292651
50000	1335909	1337065	1338417	1339749	1340852	1342147	1375363	1376942	1378710
55000	1425125	1425881	1426832	1427764	1428466	1429361	1462192	1463386	1464768
60000	1514340	1514696	1515247	1515778	1516080	1516574	1549020	1549829	1550826
65000	1603556	1603511	1603662	1603793	1603694	1603787	1635848	1636272	1636884
70000	1692772	1692327	1692076	1691807	1691308	1691001	1722677	1722715	1722942
75000	1781988	1781142	1780491	1779821	1778922	1778214	1809505	1809159	1809000
80000	1871204	1869957	1868906	1867836	1866536	1865428	1896333	1895602	1895059
85000	1960419	1958773	1957321	1955850	1954149	1952641	1983162	1982045	1981117
90000	2049635	2047588	2045736	2043864	2041763	2039854	2069990	2068488	2067175
95000	2138851	2136403	2134151	2131879	2129377	2127068	2156818	2154932	2153233
100000	2228067	2225219	2222565	2219893	2216991	2214281	2243647	2241375	2239291
105000	2317283	2314034	2310980	2307907	2304605	2301495	2330475	2327818	2325349
110000	2406498	2402849	2399395	2395922	2392219	2388708	2417303	2414261	2411408
115000	2495714	2491665	2487810	2483936	2479833	2475921	2504132	2500705	2497466
120000	2584930	2580480	2576225	2571950	2567447	2563135	2590960	2587148	2583524

RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH28	MONTH29	MONTH30	MONTH31	MONTH32	MONTH33	MONTH34	MONTH35	MONTH36
5000	609193	614386	619355	624508	629641	634553	639646	644719	649573
10000	694866	699674	704258	709026	713774	718300	723008	727696	732165
15000	780539	784962	789161	793544	797907	802048	806371	810674	814758
20000	866212	870250	874064	878062	882039	885796	889734	893651	897350
25000	951885	955538	958967	962580	966172	969543	973096	976629	979943
30000	1037558	1040826	1043869	1047097	1050305	1053291	1056459	1059606	1062535
35000	1123231	1126114	1128772	1131615	1134438	1137039	1139822	1142584	1145128
40000	1208904	1211402	1213675	1216133	1218570	1220786	1223184	1225561	1227720
45000	1294578	1296690	1298578	1300651	1302703	1304534	1306547	1308539	1310313
50000	1380251	1381978	1383481	1385169	1386836	1388282	1389909	1391517	1392905
55000	1465924	1467266	1468384	1469687	1470969	1472030	1473272	1474494	1475498
60000	1551597	1552554	1553287	1554204	1555102	1555777	1556635	1557472	1558090
65000	1637270	1637842	1638190	1638722	1639234	1639525	1639997	1640449	1640682
70000	1722943	1723130	1723093	1723240	1723367	1723273	1723360	1723427	1723275
75000	1808616	1808418	1807996	1807758	1807500	1807020	1806722	1806404	1805867
80000	1894289	1893706	1892899	1892276	1891633	1890768	1890085	1889382	1888460
85000	1979962	1978994	1977802	1976794	1975765	1974516	1973448	1972359	1971052
90000	2065635	2064282	2062705	2061312	2059898	2058263	2056810	2055337	2053645
95000	2151308	2149570	2147608	2145829	2144031	2142011	2140173	2138314	2136237
100000	2236982	2234858	2232510	2230347	2228164	2225759	2223536	2221292	2218830
105000	2322655	2320146	2317413	2314865	2312297	2309507	2306898	2304270	2301422
110000	2408328	2405434	2402316	2399383	2396429	2393254	2390261	2387247	2384015
115000	2494001	2490722	2487219	2483901	2480562	2477002	2473623	2470225	2466607
120000	2579674	2576010	2572122	2568419	2564695	2560750	2556986	2553202	2549200

RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH37	MONTH38	MONTH39	MONTH40	MONTH41	MONTH42	MONTH43	MONTH44	MONTH45
5000	676830	681859	687063	692052	697020	702162	707091	712192	717080
10000	759053	763711	768545	773163	777761	782533	787092	791822	796340
15000	841275	845563	850027	854274	858503	862904	867092	871452	875600
20000	923497	927415	931508	935386	939244	943275	947093	951083	954861
25000	1005719	1009267	1012990	1016497	1019985	1023646	1027094	1030713	1034121
30000	1087941	1091118	1094472	1097609	1100726	1104017	1107094	1110343	1113381
35000	1170164	1172970	1175953	1178720	1181467	1184388	1187095	1189974	1192641
40000	1252386	1254822	1257435	1259831	1262208	1264759	1267095	1269604	1271901
45000	1334608	1336674	1338917	1340943	1342949	1345129	1347096	1349234	1351161
50000	1416830	1418526	1420398	1422054	1423690	1425500	1427097	1428865	1430421
55000	1499052	1500378	1501880	1503166	1504432	1505871	1507097	1508495	1509681
60000	1581275	1582230	1583362	1584277	1585173	1586242	1587098	1588125	1588941
65000	1663497	1664082	1664843	1665388	1665914	1666613	1667098	1667756	1668201
70000	1745719	1745934	1746325	1746500	1746655	1746984	1747099	1747386	1747461
75000	1827941	1827786	1827807	1827611	1827396	1827355	1827100	1827016	1826721
80000	1910163	1909638	1909288	1908723	1908137	1907725	1907100	1906647	1905981
85000	1992386	1991490	1990770	1989834	1988878	1988096	1987101	1986277	1985241
90000	2074608	2073342	2072252	2070945	2069620	2068467	2067101	2065907	2064501
95000	2156830	2155194	2153733	2152057	2150361	2148838	2147102	2145538	2143761
100000	2239052	2237046	2235215	2233168	2231102	2229209	2227103	2225168	2223022
105000	2321274	2318897	2316697	2314279	2311843	2309580	2307103	2304798	2302282
110000	2403497	2400749	2398178	2395391	2392584	2389951	2387104	2384429	2381542
115000	2485719	2482601	2479660	2476502	2473325	2470321	2467104	2464059	2460802
120000	2567941	2564453	2561142	2557614	2554066	2550692	2547105	2543689	2540062

RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH46	MONTH47	MONTH48	MONTH49	MONTH50	MONTH51	MONTH52	MONTH53	MONTH54
5000	721950	726988	731817	736708	741392	746243	750889	755699	760307
10000	800839	805507	809966	814501	818829	823324	827614	832068	836320
15000	879729	884027	888115	892294	896267	900405	904339	908437	912333
20000	958619	962546	966265	970087	973704	977486	981064	984806	988346
25000	1037509	1041066	1044414	1047881	1051141	1054567	1057789	1061176	1064359
30000	1116399	1119585	1122563	1125674	1128578	1131649	1134514	1137545	1140372
35000	1195288	1198105	1200712	1203467	1206015	1208730	1211240	1213914	1216385
40000	1274178	1276624	1278862	1281260	1283453	1285811	1287965	1290283	1292398
45000	1353068	1355144	1357011	1359054	1360890	1362892	1364690	1366652	1368411
50000	1431958	1433663	1435160	1436847	1438327	1439973	1441415	1443021	1444424
55000	1510848	1512183	1513310	1514640	1515764	1517055	1518140	1519390	1520438
60000	1589737	1590703	1591459	1592433	1593201	1594136	1594865	1595760	1596451
65000	1668627	1669222	1669608	1670227	1670639	1671217	1671591	1672129	1672464
70000	1747517	1747742	1747757	1748020	1748076	1748298	1748316	1748498	1748477
75000	1826407	1826261	1825907	1825813	1825513	1825379	1825041	1824867	1824490
80000	1905297	1904781	1904056	1903606	1902950	1902460	1901766	1901236	1900503
85000	1984186	1983300	1982205	1981399	1980387	1979542	1978491	1977605	1976516
90000	2063076	2061820	2060354	2059193	2057825	2056623	2055216	2053974	2052529
95000	2141966	2140339	2138504	2136986	2135262	2133704	2131941	2130343	2128542
100000	2220856	2218859	2216653	2214779	2212699	2210785	2208667	2206713	2204556
105000	2299745	2297378	2294802	2292572	2290136	2287866	2285392	2283082	2280569
110000	2378635	2375898	2372951	2370366	2367573	2364948	2362117	2359451	2356582
115000	2457525	2454417	2451101	2448159	2445011	2442029	2438842	2435820	2432595
120000	2536415	2532937	2529250	2525952	2522448	2519110	2515567	2512189	2508608

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RESULTS WITH .04 DISCOUNT RATE

Salary:	MONTH55	MONTH56	MONTH57	MONTH58	MONTH59	MONTH60
5000	765077	769827	774376	779085	783775	788266
10000	840734	845128	849321	853674	858008	862143
15000	916391	920429	924266	928263	932240	936020
20000	992048	995730	999211	1002852	1006473	1009897
25000	1067705	1071031	1074156	1077441	1080706	1083774
30000	1143362	1146332	1149101	1152030	1154939	1157650
35000	1219019	1221633	1224046	1226619	1229172	1231527
40000	1294676	1296934	1298991	1301208	1303405	1305404
45000	1370333	1372235	1373936	1375797	1377638	1379281
50000	1445991	1447536	1448881	1450386	1451871	1453158
55000	1521648	1522837	1523826	1524975	1526104	1527035
60000	1597305	1598138	1598771	1599564	1600337	1600912
65000	1672962	1673439	1673716	1674153	1674570	1674789
70000	1748619	1748740	1748661	1748742	1748803	1748666
75000	1824276	1824041	1823606	1823331	1823036	1822543
80000	1899933	1899342	1898551	1897920	1897269	1896420
85000	1975590	1974643	1973496	1972509	1971502	1970297
90000	2051247	2049944	2048441	2047098	2045735	2044174
95000	2126904	2125246	2123386	2121687	2119968	2118051
100000	2202561	2200547	2198331	2196276	2194201	2191928
105000	2278218	2275848	2273276	2270865	2268434	2265805
110000	2353875	2351149	2348221	2345455	2342667	2339682
115000	2429533	2426450	2423166	2420044	2416900	2413559
120000	2505190	2501751	2498112	2494633	2491133	2487436

RESULTS WITH .08 DISCOUNT RATE

Overall Earnings if Retire at 15 years and n Months; .08 discount rate, and various civilian pay.

Discount rate =.08

Salary:	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	MONTH8	MONTH9
5000	276474	280849	285206	289545	293866	298169	302454	305424	310969	315200
10000	339384	343342	347282	351205	355109	358996	362864	365418	370547	374361
15000	402293	405835	409359	412865	416353	419823	423275	425412	430124	433522
20000	465203	468328	471435	474525	477596	480650	483685	485406	489702	492683
25000	528112	530821	533512	536185	538840	541477	544096	545400	549279	551844
30000	591022	593314	595588	597845	600083	602304	604506	605394	608857	611005
35000	653931	655807	657665	659505	661327	663131	664917	665388	668434	670166
40000	716841	718300	719741	721165	722570	723958	725327	725382	728012	729327
45000	779750	780793	781818	782825	783814	784785	785737	785376	787589	788488
50000	842660	843286	843894	844485	845057	845612	846148	845370	847167	847649
55000	905569	905779	905971	906145	906301	906439	906558	905364	906744	906810
60000	968479	968272	968047	967805	967544	967266	966969	965358	966322	965971
65000	1031388	1030765	1030124	1029465	1028788	1028093	1027379	1025352	1025899	1025132
70000	1094298	1093258	1092200	1091125	1090031	1088920	1087790	1085346	1085477	1084293
75000	1157207	1155751	1154277	1152785	1151275	1149747	1148200	1145340	1145054	1143454
80000	1220117	1218244	1216353	1214445	1212518	1210574	1208611	1205334	1204632	1202615
85000	1283026	1280737	1278430	1276105	1273762	1271401	1269021	1265328	1264209	1261776
90000	1345936	1343230	1340506	1337765	1335005	1332228	1329432	1325322	1323787	1320937
95000	1408845	1405723	1402583	1399425	1396249	1393055	1389842	1385316	1383364	1380098
100000	1471755	1468216	1464659	1461085	1457492	1453882	1450253	1445310	1442942	1439259
105000	1534664	1530709	1526736	1522745	1518736	1514709	1510663	1505304	1502519	1498420
110000	1597574	1593202	1588812	1584405	1579979	1575536	1571074	1565298	1562097	1557581
115000	1660483	1655695	1650889	1646065	1641223	1636363	1631484	1625292	1621674	1616742
120000	1723393	1718188	1712965	1707725	1702466	1697190	1691895	1685286	1681252	1675903

RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH10	MONTH11	MONTH12	MONTH13	MONTH14	MONTH15	MONTH16	MONTH17	MONTH18
5000	319413	323608	327785	341002	345027	349170	353160	357268	361223
10000	378158	381936	385696	398528	402167	405925	409529	413251	416821
15000	436902	440264	443608	456054	459307	462679	465898	469234	472418
20000	495647	498592	501519	513580	516447	519434	522267	525217	528016
25000	554391	556920	559431	571106	573587	576188	578636	581201	583614
30000	613136	615248	617342	628632	630728	632943	635005	637184	639211
35000	671880	673576	675254	686158	687868	689698	691373	693167	694809
40000	730625	731904	733165	743683	745008	746452	747742	749150	750406
45000	789369	790232	791077	801209	802148	803207	804111	805134	806004
50000	848114	848560	848988	858735	859288	859961	860480	861117	861602
55000	906858	906888	906900	916261	916429	916716	916849	917100	917199
60000	965603	965216	964811	973787	973569	973470	973218	973083	972797
65000	1024347	1023544	1022723	1031313	1030709	1030225	1029587	1029067	1028394
70000	1083092	1081872	1080634	1088838	1087849	1086979	1085956	1085050	1083992
75000	1141836	1140200	1138546	1146364	1144989	1143734	1142325	1141033	1139590
80000	1200581	1198528	1196457	1203890	1202130	1200488	1198694	1197016	1195187
85000	1259325	1256856	1254369	1261416	1259270	1257243	1255062	1253000	1250785
90000	1318069	1315184	1312280	1318942	1316410	1313998	1311431	1308983	1306382
95000	1376814	1373512	1370192	1376468	1373550	1370752	1367800	1364966	1361980
100000	1435558	1431840	1428103	1433994	1430690	1427507	1424169	1420949	1417578
105000	1494303	1490168	1486015	1491519	1487830	1484261	1480538	1476933	1473175
110000	1553047	1548496	1543926	1549045	1544971	1541016	1536907	1532916	1528773
115000	1611792	1606824	1601838	1606571	1602111	1597770	1593276	1588899	1584370
120000	1670536	1665152	1659749	1664097	1659251	1654525	1649645	1644882	1639968

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RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH19	MONTH20	MONTH21	MONTH22	MONTH23	MONTH24	MONTH25	MONTH26	MONTH27
5000	365295	369216	373251	377268	381137	385118	408469	412484	416608
10000	420507	424042	427692	431323	434807	438402	461395	465054	468820
15000	475719	478869	482133	485378	488476	491686	514322	517623	521033
20000	530930	533695	536573	539433	542146	544969	567249	570193	573245
25000	586142	588521	591014	593488	595815	598253	620175	622762	625458
30000	641354	643347	645455	647543	649484	651537	673102	675332	677670
35000	696566	698174	699895	701598	703154	704821	726028	727901	729883
40000	751778	753000	754336	755653	756823	758104	778955	780471	782095
45000	806990	807826	808777	809708	810492	811388	831882	833041	834308
50000	862202	862653	863217	863763	864162	864672	884808	885610	886520
55000	917414	917479	917658	917818	917831	917955	937735	938180	938733
60000	972626	972305	972098	971873	971501	971239	990662	990749	990945
65000	1027838	1027132	1026539	1025928	1025170	1024523	1043588	1043319	1043158
70000	1083050	1081958	1080980	1079983	1078839	1077807	1096515	1095888	1095370
75000	1138262	1136784	1135420	1134038	1132509	1131090	1149442	1148458	1147582
80000	1193474	1191611	1189861	1188093	1186178	1184374	1202368	1201027	1199795
85000	1248686	1246437	1244302	1242148	1239847	1237658	1255295	1253597	1252007
90000	1303898	1301263	1298742	1296203	1293517	1290941	1308221	1306167	1304220
95000	1359110	1356089	1353183	1350258	1347186	1344225	1361148	1358736	1356432
100000	1414322	1410916	1407624	1404313	1400855	1397509	1414075	1411306	1408645
105000	1469534	1465742	1462064	1458368	1454525	1450793	1467001	1463875	1460857
110000	1524746	1520568	1516505	1512423	1508194	1504076	1519928	1516445	1513070
115000	1579958	1575395	1570946	1566478	1561864	1557360	1572855	1569014	1565282
120000	1635170	1630221	1625386	1620533	1615533	1610644	1625781	1621584	1617495

RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH28	MONTH29	MONTH30	MONTH31	MONTH32	MONTH33	MONTH34	MONTH35	MONTH36
5000	420588	424675	428620	432670	436701	440594	444588	448563	452402
10000	472444	476173	479762	483454	487129	490663	494301	497919	501401
15000	524299	527672	530903	534239	537556	540733	544014	547275	550400
20000	576154	579170	582044	585023	587983	590803	593726	596631	599398
25000	628010	630668	633185	635807	638410	640873	643439	645986	648397
30000	679865	682167	684326	686591	688837	690943	693152	695342	697396
35000	731721	733665	735468	737375	739264	741013	742865	744698	746395
40000	783576	785163	786609	788159	789691	791083	792578	794054	795393
45000	835431	836662	837750	838943	840118	841153	842291	843410	844392
50000	887287	888160	888891	889728	890545	891223	892004	892766	893391
55000	939142	939658	940033	940512	940972	941293	941717	942121	942389
60000	990998	991156	991174	991296	991399	991363	991430	991477	991388
65000	1042853	1042655	1042315	1042080	1041826	1041433	1041143	1040833	1040387
70000	1094708	1094153	1093456	1092864	1092253	1091503	1090855	1090189	1089386
75000	1146564	1145651	1144597	1143648	1142680	1141573	1140568	1139545	1138384
80000	1198419	1197150	1195739	1194432	1193107	1191643	1190281	1188900	1187383
85000	1250274	1248648	1246880	1245217	1243534	1241713	1239994	1238256	1236382
90000	1302130	1300146	1298021	1296001	1293962	1291783	1289707	1287612	1285381
95000	1353985	1351645	1349162	1346785	1344389	1341853	1339420	1336968	1334379
100000	1405841	1403143	1400304	1397569	1394816	1391923	1389133	1386324	1383378
105000	1457696	1454641	1451445	1448353	1445243	1441993	1438846	1435680	1432377
110000	1509551	1506140	1502586	1499137	1495670	1492063	1488559	1485035	1481376
115000	1561407	1557638	1553727	1549922	1546097	1542133	1538272	1534391	1530374
120000	1613262	1609136	1604869	1600706	1596524	1592203	1587984	1583747	1579373

RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH37	MONTH38	MONTH39	MONTH40	MONTH41	MONTH42	MONTH43	MONTH44	MONTH45
5000	469432	473268	477202	481003	484786	488665	492412	496253	499965
10000	518100	521606	525209	528679	532132	535680	539097	542607	545988
15000	566768	569943	573216	576356	579477	582695	585781	588961	592011
20000	615436	618281	621223	624032	626823	629710	632465	635315	638034
25000	664104	666618	669230	671708	674169	676725	679150	681668	684057
30000	712773	714956	717237	719384	721514	723740	725834	728022	730080
35000	761441	763293	765244	767060	768860	770755	772518	774376	776104
40000	810109	811631	813250	814737	816205	817769	819202	820729	822127
45000	858777	859968	861257	862413	863551	864784	865887	867083	868150
50000	907445	908306	909264	910089	910896	911799	912571	913437	914173
55000	956113	956643	957271	957765	958242	958814	959255	959790	960196
60000	1004781	1004981	1005278	1005441	1005588	1005829	1005940	1006144	1006219
65000	1053449	1053318	1053285	1053118	1052933	1052844	1052624	1052498	1052242
70000	1102117	1101656	1101291	1100794	1100279	1099859	1099308	1098851	1098265
75000	1150786	1149993	1149298	1148470	1147624	1146874	1145993	1145205	1144288
80000	1199454	1198330	1197305	1196146	1194970	1193889	1192677	1191559	1190311
85000	1248122	1246668	1245312	1243823	1242316	1240904	1239361	1237912	1236334
90000	1296790	1295005	1293319	1291499	1289661	1287919	1286046	1284266	1282357
95000	1345458	1343343	1341326	1339175	1337007	1334934	1332730	1330620	1328380
100000	1394126	1391680	1389333	1386851	1384352	1381949	1379414	1376974	1374403
105000	1442794	1440018	1437339	1434527	1431698	1428964	1426099	1423327	1420426
110000	1491462	1488355	1485346	1482204	1479043	1475979	1472783	1469681	1466449
115000	1540130	1536693	1533353	1529880	1526389	1522994	1519467	1516035	1512472
120000	1588798	1585030	1581360	1577556	1573735	1570009	1566152	1562388	1558495

RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH46	MONTH47	MONTH48	MONTH49	MONTH50	MONTH51	MONTH52	MONTH53	MONTH54
5000	503659	507445	511104	514670	518113	521645	525055	528552	531929
10000	549352	552807	556135	559395	562532	565758	568861	572053	575123
15000	595044	598169	601166	604120	606951	609871	612668	615553	618317
20000	640737	643530	646197	648846	651370	653983	656475	659054	661512
25000	686429	688892	691228	693571	695789	698096	700281	702554	704706
30000	732122	734254	736259	738296	740207	742209	744088	746055	747900
35000	777814	779616	781291	783021	784626	786322	787894	789555	791095
40000	823506	824978	826322	827746	829045	830434	831701	833056	834289
45000	869199	870339	871353	872471	873464	874547	875508	876556	877483
50000	914891	915701	916384	917196	917883	918660	919314	920057	920678
55000	960584	961063	961415	961921	962302	962773	963121	963557	963872
60000	1006276	1006425	1006446	1006646	1006721	1006885	1006927	1007058	1007066
65000	1051969	1051787	1051478	1051371	1051140	1050998	1050734	1050558	1050261
70000	1097661	1097148	1096509	1096096	1095558	1095111	1094541	1094058	1093455
75000	1143353	1142510	1141540	1140821	1139977	1139224	1138347	1137559	1136649
80000	1189046	1187872	1186571	1185546	1184396	1183336	1182154	1181059	1179844
85000	1234738	1233234	1231602	1230271	1228815	1227449	1225960	1224560	1223038
90000	1280431	1278596	1276633	1274996	1273234	1271562	1269767	1268060	1266232
95000	1326123	1323957	1321665	1319721	1317653	1315675	1313574	1311561	1309427
100000	1371816	1369319	1366696	1364446	1362072	1359787	1357380	1355061	1352621
105000	1417508	1414681	1411727	1409171	1406491	1403900	1401187	1398562	1395815
110000	1463200	1460043	1456758	1453896	1450910	1448013	1444993	1442062	1439010
115000	1508893	1505405	1501789	1498621	1495328	1492126	1488800	1485563	1482204
120000	1554585	1550766	1546820	1543346	1539747	1536238	1532607	1529063	1525398

RESULTS WITH .08 DISCOUNT RATE

Salary:	MONTH55	MONTH56	MONTH57	MONTH58	MONTH59	MONTH60
5000	535392	538838	542164	545575	548968	552245
10000	578280	581420	584440	587545	590632	593602
15000	621168	624002	626716	629514	632296	634960
20000	664057	666584	668992	671484	673959	676317
25000	706945	709166	711268	713454	715623	717675
30000	749833	751748	753543	755424	757286	759032
35000	792721	794330	795819	797394	798950	800390
40000	835609	836912	838095	839363	840614	841747
45000	878497	879494	880371	881333	882277	883105
50000	921386	922076	922647	923303	923941	924462
55000	964274	964658	964923	965273	965605	965820
60000	1007162	1007240	1007199	1007242	1007268	1007177
65000	1050050	1049822	1049475	1049212	1048932	1048535
70000	1092938	1092404	1091751	1091182	1090595	1089892
75000	1135827	1134986	1134027	1133152	1132259	1131249
80000	1178715	1177568	1176302	1175121	1173923	1172607
85000	1221603	1220150	1218578	1217091	1215586	1213964
90000	1264491	1262732	1260854	1259061	1257250	1255322
95000	1307379	1305314	1303130	1301031	1298914	1296679
100000	1350267	1347896	1345406	1343000	1340577	1338037
105000	1393156	1390478	1387682	1384970	1382241	1379394
110000	1436044	1433060	1429958	1426940	1423904	1420752
115000	1478932	1475643	1472234	1468910	1465568	1462109
120000	1521820	1518225	1514510	1510880	1507232	1503467

RESULTS WITH .12 DISCOUNT RATE

Overall Earnings if Retire at 15 years n Months; .12 discount rate, and various civilian pay.

Discount rate =.12

Salary:	MONTH0	MONTH1	MONTH2	MONTH3	MONTH4	MONTH5	MONTH6	MONTH7	MONTH8	MONTH9
5000	202440	206444	210431	214399	218350	222282	226196	229167	233971	237832
10000	248204	251792	255362	258914	262448	265964	269462	272016	276404	279848
15000	293969	297140	300294	303429	306547	309646	312727	314865	318836	321864
20000	339733	342488	345225	347944	350645	353328	355993	357714	361269	363880
25000	385498	387836	390157	392459	394744	397010	399258	400563	403701	405896
30000	431263	433184	435088	436974	438842	440692	442524	443412	446134	447912
35000	477027	478532	480020	481489	482941	484374	485789	486261	488566	489928
40000	522792	523880	524951	526004	527039	528056	529055	529110	530999	531944
45000	568556	569228	569883	570519	571138	571738	572320	571959	573431	573960
50000	614321	614576	614814	615034	615236	615420	615586	614808	615864	615976
55000	660085	659924	659746	659549	659335	659102	658852	657657	658296	657992
60000	705850	705272	704677	704064	703433	702784	702117	700506	700729	700008
65000	751614	750620	749609	748579	747532	746466	745383	743355	743161	742024
70000	797379	795968	794540	793094	791630	790148	788648	786204	785594	784040
75000	843143	841317	839472	837609	835729	833830	831914	829053	828026	826056
80000	888908	886665	884403	882124	879827	877512	875179	871902	870459	868072
85000	934672	932013	929335	926639	923926	921194	918445	914751	912891	910088
90000	980437	977361	974266	971154	968024	964876	961710	957600	955324	952104
95000	1026201	1022709	1019198	1015669	1012123	1008558	1004976	1000449	997756	994120
100000	1071966	1068057	1064129	1060184	1056221	1052240	1048241	1043298	1040189	1036136
105000	1117730	1113405	1109061	1104699	1100320	1095922	1091507	1086147	1082621	1078152
110000	1163495	1158753	1153992	1149214	1144418	1139604	1134772	1128996	1125054	1120168
115000	1209259	1204101	1198924	1193729	1188517	1183286	1178038	1171845	1167486	1162184
120000	1255024	1249449	1243855	1238244	1232615	1226968	1221303	1214694	1209919	1204200

RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH10	MONTH11	MONTH12	MONTH13	MONTH14	MONTH15	MONTH16	MONTH17	MONTH18
5000	241674	245498	249305	259336	262890	266524	270045	273644	277133
10000	283274	286681	290071	299730	302913	306175	309324	312551	315668
15000	324873	327864	330838	340125	342936	345826	348603	351458	354203
20000	366473	369047	371604	380519	382958	385476	387882	390366	392738
25000	408072	410231	412371	420914	422981	425127	427161	429273	431274
30000	449672	451414	453137	461309	463004	464778	466440	468180	469809
35000	491271	492597	493904	501703	503027	504429	505719	507087	508344
40000	532871	533780	534670	542098	543049	544080	544998	545994	546880
45000	574470	574963	575437	582493	583072	583731	584277	584901	585415
50000	616070	616146	616203	622887	623095	623382	623556	623808	623950
55000	657669	657329	656970	663282	663118	663033	662835	662716	662485
60000	699269	698512	697736	703676	703140	702684	702114	701623	701021
65000	740868	739695	738503	744071	743163	742334	741393	740530	739556
70000	782468	780878	779269	784466	783186	781985	780672	779437	778091
75000	824067	822061	820036	824860	823209	821636	819951	818344	816626
80000	865667	863244	860803	865255	863231	861287	859230	857251	855162
85000	907266	904427	901569	905650	903254	900938	898509	896158	893697
90000	948866	945610	942336	946044	943277	940589	937788	935065	932232
95000	990465	986793	983102	986439	983300	980240	977067	973973	970767
100000	1032065	1027976	1023869	1026834	1023323	1019891	1016346	1012880	1009303
105000	1073664	1069159	1064635	1067228	1063345	1059541	1055625	1051787	1047838
110000	1115264	1110342	1105402	1107623	1103368	1099192	1094905	1090694	1086373
115000	1156863	1151525	1146168	1148017	1143391	1138843	1134184	1129601	1124908
120000	1198463	1192708	1186935	1188412	1183414	1178494	1173463	1168508	1163444

RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH19	MONTH20	MONTH21	MONTH22	MONTH23	MONTH24	MONTH25	MONTH26	MONTH27
5000	280697	284152	287681	291193	294598	298075	314669	318084	321569
10000	318860	321944	325101	328241	331274	334379	350640	353724	356877
15000	357024	359735	362521	365288	367950	370683	386612	389364	392185
20000	395187	397527	399940	402336	404626	406987	422584	425004	427493
25000	433350	435318	437360	439384	441302	443291	458556	460644	462801
30000	471514	473110	474780	476432	477978	479595	494528	496284	498109
35000	509677	510901	512199	513479	514654	515899	530500	531924	533417
40000	547840	548693	549619	550527	551329	552203	566472	567564	568725
45000	586004	586484	587039	587575	588005	588507	602444	603204	604032
50000	624167	624276	624458	624623	624681	624811	638416	638844	639340
55000	662331	662067	661878	661670	661357	661115	674388	674484	674648
60000	700494	699859	699297	698718	698033	697419	710360	710124	709956
65000	738657	737650	736717	735766	734709	733723	746332	745764	745264
70000	776821	775442	774137	772814	771385	770027	782304	781404	780572
75000	814984	813233	811556	809861	808061	806331	818276	817044	815880
80000	853148	851025	848976	846909	844737	842635	854248	852684	851188
85000	891311	888816	886396	883957	881412	878939	890220	888324	886496
90000	929474	926608	923815	921005	918088	915243	926192	923963	921804
95000	967638	964399	961235	958052	954764	951547	962164	959603	957112
100000	1005801	1002191	998654	995100	991440	987851	998136	995243	992420
105000	1043964	1039982	1036074	1032148	1028116	1024155	1034108	1030883	1027727
110000	1082128	1077774	1073494	1069196	1064792	1060459	1070080	1066523	1063035
115000	1120291	1115565	1110913	1106244	1101468	1096763	1106052	1102163	1098343
120000	1158455	1153357	1148333	1143291	1138144	1133067	1142024	1137803	1133651

RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH28	MONTH29	MONTH30	MONTH31	MONTH32	MONTH33	MONTH34	MONTH35	MONTH36
5000	324952	328403	331753	335169	338568	341869	345234	348580	351832
10000	359928	363047	366065	369149	372216	375185	378217	381232	384152
15000	394904	397690	400377	403129	405864	408501	411201	413884	416471
20000	429880	432334	434689	437109	439511	441816	444185	446535	448791
25000	464856	466978	469001	471089	473159	475132	477168	479187	481111
30000	499832	501622	503312	505068	506807	508448	510152	511839	513430
35000	534808	536266	537624	539048	540455	541764	543136	544490	545750
40000	569784	570910	571936	573028	574102	575079	576119	577142	578069
45000	604759	605554	606248	607008	607750	608395	609103	609794	610389
50000	639735	640197	640560	640988	641398	641711	642087	642445	642709
55000	674711	674841	674871	674967	675046	675026	675070	675097	675028
60000	709687	709485	709183	708947	708693	708342	708054	707749	707348
65000	744663	744129	743495	742927	742341	741658	741038	740400	739668
70000	779639	778773	777807	776907	775989	774974	774022	773052	771987
75000	814615	813417	812119	810887	809637	808289	807005	805704	804307
80000	849591	848061	846431	844866	843284	841605	839989	838355	836626
85000	884566	882704	880742	878846	876932	874921	872973	871007	868946
90000	919542	917348	915054	912826	910580	908237	905956	903659	901266
95000	954518	951992	949366	946806	944228	941552	938940	936310	933585
100000	989494	986636	983678	980785	977875	974868	971924	968962	965905
105000	1024470	1021280	1017990	1014765	1011523	1008184	1004907	1001614	998225
110000	1059446	1055924	1052302	1048745	1045171	1041499	1037891	1034265	1030544
115000	1094422	1090568	1086613	1082725	1078819	1074815	1070875	1066917	1062864
120000	1129398	1125211	1120925	1116705	1112467	1108131	1103859	1099569	1095184

RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH37	MONTH38	MONTH39	MONTH40	MONTH41	MONTH42	MONTH43	MONTH44	MONTH45
5000	363672	366805	369998	373099	376184	379327	382380	385490	388511
10000	395695	398531	401428	404232	407021	409868	412625	415438	418163
15000	427718	430258	432858	435366	437859	440409	442869	445386	447814
20000	459741	461985	464288	466500	468696	470950	473114	475334	477466
25000	491764	493712	495719	497634	499533	501491	503358	505282	507117
30000	523788	525438	527149	528768	530371	532031	533603	535230	536769
35000	555811	557165	558579	559901	561208	562572	563847	565178	566420
40000	587834	588892	590009	591035	592045	593113	594091	595126	596072
45000	619857	620619	621440	622169	622883	623654	624336	625074	625723
50000	651880	652345	652870	653303	653720	654195	654580	655022	655375
55000	683903	684072	684300	684437	684558	684736	684825	684970	685027
60000	715927	715799	715731	715571	715395	715277	715069	714918	714678
65000	747950	747525	747161	746704	746232	745818	745314	744866	744330
70000	779973	779252	778591	777838	777070	776359	775558	774814	773981
75000	811996	810979	810021	808972	807907	806900	805802	804762	803633
80000	844019	842706	841452	840106	838744	837440	836047	834710	833284
85000	876043	874432	872882	871240	869582	867981	866291	864658	862936
90000	908066	906159	904312	902373	900419	898522	896536	894606	892587
95000	940089	937886	935742	933507	931256	929063	926780	924554	922239
100000	972112	969612	967173	964641	962094	959604	957025	954502	951890
105000	1004135	1001339	998603	995775	992931	990145	987269	984450	981542
110000	1036158	1033066	1030033	1026909	1023768	1020686	1017514	1014398	1011193
115000	1068182	1064793	1061463	1058042	1054606	1051227	1047758	1044346	1040845
120000	1100205	1096519	1092894	1089176	1085443	1081768	1078002	1074294	1070496

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RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH46	MONTH47	MONTH48	MONTH49	MONTH50	MONTH51	MONTH52	MONTH63	MONTH54
5000	391517	394577	397550	400341	403049	405810	408489	411220	413871
10000	420872	423635	426312	428839	431282	433778	436192	438659	441045
15000	450227	452694	455075	457336	459514	461746	463896	466098	468219
20000	479582	481752	483837	485834	487747	489714	491599	493536	495393
25000	508937	510811	512599	514331	515980	517682	519303	520975	522567
30000	538292	539870	541361	542828	544213	545650	547006	548414	549741
35000	567647	568928	570123	571326	572446	573618	574709	575852	576915
40000	597002	597987	598885	599823	600678	601586	602413	603291	604089
45000	626357	627046	627648	628321	628911	629555	630116	630730	631263
50000	655713	656104	656410	656818	657144	657523	657820	658168	658437
55000	685068	685163	685172	685316	685377	685491	685523	685607	685611
60000	714423	714221	713934	713813	713609	713459	713226	713046	712785
65000	743778	743280	742696	742311	741842	741427	740930	740484	739959
70000	773133	772339	771458	770808	770075	769395	768633	767923	767133
75000	802488	801397	800220	799306	798308	797363	796336	795362	794307
80000	831843	830456	828983	827803	826540	825331	824040	822801	821481
85000	861198	859514	857745	856301	854773	853299	851743	850239	848655
90000	890553	888573	886507	884798	883006	881267	879447	877678	875829
95000	919908	917632	915269	913295	911239	909235	907150	905117	903003
100000	949263	946690	944031	941793	939472	937203	934853	932555	930177
105000	978618	975749	972793	970290	967704	965171	962557	959994	957351
110000	1007973	1004808	1001556	998788	995937	993139	990260	987433	984525
115000	1037328	1033866	1030318	1027285	1024170	1021108	1017964	1014871	1011699
120000	1066683	1062925	1059080	1055783	1052403	1049076	1045667	1042310	1038873

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RESULTS WITH .12 DISCOUNT RATE

Salary:	MONTH55	MONTH56	MONTH57	MONTH58	MONTH59	MONTH60
5000	416572	419258	421865	424522	427162	429727
10000	443481	445903	448245	450637	453013	455312
15000	470391	472547	474625	476752	478863	480898
20000	497300	499192	501005	502867	504714	506484
25000	524209	525836	527385	528982	530565	532070
30000	551119	552481	553765	555098	556415	557656
35000	578028	579126	580145	581213	582266	583242
40000	604937	605770	606525	607328	608116	608827
45000	631846	632415	632905	633443	633967	634413
50000	658756	659060	659285	659559	659817	659999
55000	685665	685704	685665	685674	685668	685585
60000	712574	712349	712045	711789	711518	711171
65000	739484	738993	738424	737904	737369	736757
70000	766393	765638	764804	764019	763219	762342
75000	793302	792283	791184	790135	789070	787928
80000	820212	818927	817564	816250	814920	8135 14
85000	847121	845572	843944	842365	840771	839100
90000	874030	872216	870324	868480	866621	864686
95000	900940	898861	896704	894596	892472	890272
100000	927849	925506	923084	920711	918322	915857
105000	954758	952150	949464	946826	944173	941443
110000	981667	978795	975844	972941	970024	967029
115000	1008577	1005439	1002224	999056	995874	992615
120000	1035486	1032084	1028604	1025172	1021725	1018201

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APPENDIX D

DECISION MATRIX
EXAMPLE I

Weights	3	1	1	6	
Criteria	Pay	Career Satisfaction	Risk Aversion	Safety/ Security	Sum
Strategies					
Retire at 15YOS	6(18)	6(6)	1(1)	1(6)	31
Retire at 16YOS	5(15)	5(5)	2(2)	2(12)	32
Retire at 17YOS	4(12)	4(4)	3(3)	3(18)	37
Retire at 18YOS	3(9)	3(3)	4(4)	4(24)	40
Retire at 19YOS	2(6)	2(2)	5(5)	5(30)	41
Retire at 20YOS	1(3)	1(1)	6(6)	6(36)	42

* Pay results are for assumed .04 discount rate and $50,000 civilian pay

** 6(18) indicates 6 multiplied by its weight of 3, equals 18

DECISION MATRIX
EXAMPLE II

Weights	4	1	1	1	
Criteria	Pay	Career Satisfaction	Risk Aversion	Safety/ Security	Sum
Strategies					
Retire at 15YOS	6(24)	1(1)	1(1)	1(1)	27
Retire at 16YOS	5(20)	2(2)	2(2)	2(2)	26
Retire at 17YOS	4(16)	3(3)	3(3)	3(3)	25
Retire at 18YOS	3(12)	4(4)	4(4)	4(4)	24
Retire at 19YOS	2(8)	5(5)	5(5)	5(5)	23
Retire at 20YOS	1(4)	6(6)	6(6)	6(6)	22

* Pay results are for assumed .04 discount rate and $50,000 civilian pay

** 6(24) indicates 6 multiplied by its weight of 4, equals 24

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